



Reliability Prediction

Below, engineers Elaine Sears (at right) and Dr. Abbas Emami-Naeini of Systems Control Technology, Inc. (SCT), Palo Alto, California are working on an aircraft performance assessment. SCT is a company that provides research and development services in support of government contracts.

SCT's clients include a number of aerospace industry firms engaged in such government-sponsored projects as mission planning, flight simulation, aircraft and avionics research, air traffic control and commercial software development. Among other services SCT develops software tools for use in concurrent design and engineering.

An example of an SCT project is research on vehicle subsystem integrity, which involves performance predictions of such subsystems as landing gear for jet aircraft.

In this type of work, SCT uses a software package known as RELAV (Reliability and Availability Analysis), which was developed by Jet Propulsion Laboratory and supplied to SCT by the Computer Software Management and Information Center (COSMIC). COSMIC is NASA's mechanism for making available to industry and government users computer programs developed by government agencies that have secondary applicability.

RELAV contributes to SCT's research by providing a system level evaluation of a technology. SCT assesses systems — such as the mechanism of a landing gear — by first describing it as a set of components operating together to perform a specific function. Each of the components has a specific probability relating to performance, which together form a system probability. RELAV uses the subsystem and total system

probabilities to predict the availability of the system in terms of the probability of success. RELAV can also calculate a system's reliability for a specific mission. SCT can then translate this information into operational support requirements and minimal maintenance-free periods of operation. •

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